

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

80. (CURRENTLY AMENDED) A method for rinsing metallized semiconductor substrates following treatment of the substrates with an etch residue removal chemistry, the method comprising the steps of:

providing at least one metallized semiconductor substrate, the substrate having etch residue removal chemistry thereon; ~~and~~

rinsing the etch residue removal chemistry from the substrate and minimizing metal corrosion of the substrate by rinsing the substrate with an aqueous medium comprising an anti-corrosive agent including an organic acid selected from the group consisting of mono- and polycarboxylic acids in an amount effective to minimize metal corrosion;

removing the aqueous medium from the process vessel;

and introducing a drying vapor into the process vessel which the substrate remains substantially stationary within the process vessel.

82. (ORIGINAL) A method according to claim 80 in which the organic acid includes includes an organic carboxylic acid.

83. (PREVIOUSLY AMENDED) A method according to claim 80 in which the organic carboxylic acid includes a mono-carboxylic acid.

84. (ORIGINAL) A method according to claim 83 in which the anti-corrosive agent includes acetic acid.

85. (ORIGINAL) A method according to claim 80 in which the substrate contains metallized copper.

86. (ORIGINAL) A method according to claim 80 in which the substrate contains titanium nitride.

87. (ORIGINAL) A method according to claim 80 in which the substrate contains aluminum and/or aluminum alloys.

88. (CURRENTLY AMENDED) A method for rinsing metallized semiconductor substrates containing copper following treatment of the substrates with an etch residue removal chemistry, the method comprising the steps of:

providing at least one semiconductor substrate having copper thereon, the substrate further having etch residue removal chemistry thereon; and

rinsing etch residue removal chemistry from the substrate and minimizing metal corrosion of the copper by rinsing the substrate with an aqueous medium comprising an amount of acetic acid effective to minimize metal corrosion of the copper.

89. (CURRENTLY AMENDED) A method for rinsing metallized semiconductor substrates containing titanium nitride following treatment of the substrates with an etch residue removal chemistry, the method comprising the steps of:

providing at least one semiconductor substrate having titanium nitride thereon, the substrate further having etch residue removal chemistry thereon; and

rinsing the etch residue removal chemistry from the substrate and minimizing metal corrosion of the titanium nitride by rinsing the substrate with an aqueous medium comprising an amount of acetic acid effective to minimize metal corrosion of the titanium nitride.

90. (CURRENTLY AMENDED) A method for rinsing metallized semiconductor substrates following treatment of the substrates with an etch residue removal chemistry, comprising:

providing at least one metallized semiconductor substrate, the substrate having etch residue removal chemistry thereon;

removing the etch residue removal chemistry from the substrate and minimizing metal corrosion on the substrate by contacting the substrate with an aqueous medium containing one or more anti-corrosive chemical agents wherein the concentration of the anti-corrosive chemical agent or agents is maintained at a controlled level or within a predetermined range, and the substrate is maintained in contact with the chemical agent or agents for a predetermined time.

91. (ORIGINAL) A method according to claim 90 in which the anti-corrosive chemical agent includes an organic compound.

92. (ORIGINAL) A method according to claim 91 in which the organic compound is an organic carboxylic acid.

93. (ORIGINAL) A method according to claim 92 in which the organic carboxylic acid is a mono-carboxylic acid.

94. (ORIGINAL) A method according to claim 93 in which the mono-carboxylic acid is acetic acid.

95. (ORIGINAL) A method according to claim 90 in which the substrate contains metallized copper.

96. (ORIGINAL) A method according to claim 90 in which the substrate contains titanium nitride.

97. (ORIGINAL) A method according to claim 90 in which the substrate contains aluminum and/or aluminum alloys.

98. (CURRENTLY AMENDED) A method for rinsing metallized semiconductor substrates following treatment of the substrates with an etch residue removal chemistry, comprising:

providing at least one metallized semiconductor substrate, the substrate having etch residue removal chemistry thereon;

removing the etch residue removal chemistry from the substrate and minimizing metal corrosion on the substrate by contacting the substrate with an aqueous rinse medium containing anti-corrosive chemical agent including an organic compound, wherein the amount of the anti-corrosive chemical agent in the aqueous medium is maintained in a controlled manner, at a predetermined concentration or within a predetermined range, conducting the contacting step for a predetermined time, and then rinsing the substrate with deionized water substantially free of the anti-corrosive chemical agent.

99. (ORIGINAL) A method according to claim 98 in which the organic compound is an organic acid.

100. (ORIGINAL) A method according to claim 99 in which the organic acid comprises an organic carboxylic acid.

101. (ORIGINAL) A method according to claim 100 in which the organic carboxylic acid comprises a mono-carboxylic acid.

102. (ORIGINAL) A method according to claim 101 in which the mono-carboxylic acid comprises acetic acid.

103. (ORIGINAL) A method according to claim 98 in which the substrate contains metallized copper.

104. (ORIGINAL) A method according to claim 98 in which the substrate contains titanium nitride.

105. (ORIGINAL) A method according to claim 98 in which the substrate contains metallized aluminum and/or aluminum alloys.

106. (ORIGINAL) A method according to claim 98 further comprising selecting the anti-corrosive chemical agent in accordance with the metal or metals comprising the semiconductor substrate, to minimize corrosion of said metal or metals resulting from the rinsing.

107. (ORIGINAL) A method according to claim 98 wherein the two rinsing steps are carried out in the same container.

108. (ORIGINAL) A method according to claim 98 further comprising drying the semiconductor substrate, subsequent to the second rinse step utilizing a drying vapor.

109. (ORIGINAL) A method according to claim 108 in which the drying vapor is one that condenses on the surface of the substrate and reduces the surface tension of any residual water, causing said residual water to flow off of the surface.

110. (ORIGINAL) A method according to claim 108 in which the drying vapor is isopropanol.

111. (ORIGINAL) A method according to claim 108 in which the rinsing and drying steps are carried out in the same container.

112. (ORIGINAL) The method according to claim 80 wherein the etch residue removal chemistry includes N-methylpyrrolidinone.

113. (WITHDRAWN) The method according to claim 80 wherein the etch residue removal chemistry includes hydroxylamine.

114. (ORIGINAL) The method according to claim 80 wherein the aqueous solution consists essentially of a mono-carboxylic acid and water.

115. (ORIGINAL) The method according to claim 114 wherein the wherein the aqueous solution consists essentially of acetic acid and water.

116. (ORIGINAL) The method of claim 80 wherein the rinsing step includes positioning the substrate with etch residue removal chemistry thereon into a rinse vessel and introducing the aqueous medium into the rinse vessel.

117. (ORIGINAL) The method of claim 90 wherein the contacting step includes positioning the substrate with etch residue removal chemistry thereon into a rinse vessel and introducing the aqueous medium into the rinse vessel.

118. (ORIGINAL) The method of claim 98 wherein the contacting step includes positioning the substrate with etch residue removal chemistry thereon into a rinse vessel and introducing the aqueous medium into the rinse vessel.

119. (ORIGINAL) The method of claim 80 wherein the rinsing step minimizes corrosion of metal on the metallized substrate and rinses the etch residue removal chemistry from the substrate.

120. (ORIGINAL) The method of claim 90 wherein the contacting step minimizes corrosion of metal on the metallized substrate and rinses the etch residue removal chemistry from the substrate.

121. (ORIGINAL) The method of claim 98 wherein the contacting step minimizes corrosion of metal on the metallized substrate and rinses the etch residue removal chemistry from the substrate.